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**BROECKEL et al.**

**Atty Docket: 48320**  
**Serial No.: 09/487,000**

- **Brief on Appeal**
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

## IN RE APPLICATION

OF: BRÖCKEL ET AL.

SERIAL NO. 09/487,000

FILED: MARCH 07, 2000

FOR: IMPREGNATED SALTS, THEIR PRODUCTION AND USE

TO: HONORABLE COMMISSIONER FOR PATENTS

P.O. BOX 1450; ALEXANDRIA, VA 22313-1450

ATTY. DOCKET: PF++48320

CONFIRMATION NO.: 7044

GROUP ART UNIT: 1761

EXAMINER: HELEN F. PRATT

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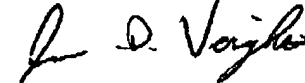
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Sir:

1. ☐ NOTICE OF APPEAL: Applicant hereby appeals to the Board of Appeals from the decision dated -/-, of the Primary Examiner finally rejecting Claims -/-.
2. ☒ BRIEF ON APPEAL in this application is transmitted herewith.  
☐ Applicants hereby request an Oral Hearing.
3. ☒ Applicants hereby request entry of their timely reply dated July 19, 2005 for purposes of appeal.
4. ☐ Applicants hereby petition for a -/- month extension of time under 37 C.F.R. §1.136(a).  
☐ A petition for a -/- month extension of time including the requisite fee of -/- has been submitted along with the reply under 37 C.F.R. §1.116 dated -/-.
5. ☒ The following fee(s) in the total amount of \$500.00 is(are) paid herewith by credit card (Form PTO-2038 enclosed):  
☒ The \$ 500.00 fee required under 37 C.F.R. §41.20(b)(2).  
☐ The -/- fee required under 37 C.F.R. §41.20(b)(3).  
☐ The -/- fee required under 37 C.F.R. §1.17(a).  
☐ A fee is not required (Fee paid in prior appeal).
6. ☒ The Commissioner is hereby authorized to charge any fee which may be further required, or credit any over payment, to Deposit Account No. 14.1437. A duplicate copy of this sheet is attached.

Respectfully submitted,

NOVAK DRUCE DELUCA &amp; QUIGG, LLP



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Honorable Commissioner

for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

BRIEF ON APPEAL UNDER 37 C.F.R. §41.37

Sir:

This is an appeal from the Examiner's final rejection of Claims 1, 2, 4 to 19 and 21 to 25,  
dated June 15, 2005. Claims 1, 2, 4 to 19 and 21 to 25 are currently pending in the application.

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**REAL PARTY IN INTEREST:**

The real party in interest is BASF Aktiengesellschaft, 67056 Ludwigshafen, Germany.

**RELATED APPEALS AND INTERFERENCES:**

To the best of the undersigned's knowledge, there are no related appeals or interferences within the meaning of 37 C.F.R. §41.37(c)(1)(ii).

**STATUS OF THE CLAIMS:**

The claims on appeal before the Board of Patent Appeals and Interferences are Claims 1, 2, 4 to 19 and 21 to 25. The current status of those claims is

- Claims 1, 2, 4 to 19 and 21 to 25 are currently pending;
- Claims 1, 2, 4 to 19 and 21 to 25 stand rejected;<sup>(1)</sup>
- No claim stands allowed;
- No claim stands objected to; and
- No claim stands withdrawn from consideration.

A copy of these pending claims is found in the attached Claims Appendix.

**STATUS OF THE AMENDMENTS:**

No amendments have been filed in this application subsequent to the final rejection.

**SUMMARY OF THE CLAIMED SUBJECT MATTER:**

In a first aspect, appellants' invention relates to certain impregnated salts which are defined in Claims 1,<sup>(2)</sup> 2,<sup>(3)</sup> 4,<sup>(4)</sup> 5,<sup>(5)</sup> 22<sup>(6)</sup> and 23 to 25,<sup>(7)</sup> and to the preparation thereof which is defined in Claims 12 and 13.<sup>(8)</sup> The respective salts of appellants' invention as defined in Claim 1 are required to meet the following criteria:

- appellants' salts have a particle size of 10  $\mu\text{m}$  to 2000  $\mu\text{m}$ ;
- appellants' salts comprise at least one salt of one or more carboxylic acids;

(1) The omission of Claim 22 in the status of the claims indicated by the Examiner in No. 7. of the Advisory Action dated July 28, 2005, is deemed to be due to an error on the part of the Examiner.

(2) Cf. eg. also page 2, indicated lines 22 to 26, page 4, indicated lines 11 to 15, of the application.

(3) Cf. eg. also page 3, indicated lines 26 to 28, of the application.

(4) Cf. eg. also page 3, indicated lines 39 to 47, of the application.

(5) Cf. eg. also page 3, indicated lines 30 to 32, of the application.

(6) Cf. eg. also page 3, indicated lines 30 to 32, of the application.

(7) Cf. eg. also page 3, indicated lines 12 to 17, of the application.

(8) Cf. eg. also page 2, indicated lines 34 to 38; page 4, indicated line 11, to page 5, indicated line 12, and page 8, indicated lines 12 to 15, of the application.

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- the at least one salt of the one or more carboxylic acids comprised in appellants' salts be impregnated with from 0.5 to 30% by weight, based on the amount of the carboxylic acid salt(s), of at least one carboxylic acid, and
- the at least one carboxylic acid which is employed for impregnating the at least one salt of the one or more carboxylic acids comprised in appellants' salts be liquid or become liquid at a temperature of 40°C or below.

Upon impregnation of the carboxylic acid salt with the specified amounts of the particular liquid acid to obtain appellants' impregnated salts, the liquid acid penetrates into the salt crystals, so that the impregnated salts defined in appellants' claims are solid substances.<sup>(9)</sup>

Appellants' invention seeks to solve the problems encountered when short-chain organic acids such as formic acid, acetic acid or propionic acid are used for acidifying and for preserving human or animal food,<sup>(10)</sup> and appellants have found that the impregnated salts provide for a composition which not only has a maximum content of carboxylic acid for acidifying and preservation, but also display very little odor, if any, and exhibit good storage, flow, and processing properties.<sup>(11)</sup> Corresponding to the problem to be solved by appellants' invention, some of the preferred embodiments of appellants' impregnated salts require

- that the carboxylic acids in the carboxylic acid salts and the carboxylic acid used for impregnating the carboxylic acid salts be identical;<sup>(12)</sup> and/or
- that the at least one salt of a carboxylic acid be a salt of an acid selected from the group consisting of formic acid, acetic acid or propionic acid, and that the salt be impregnated with at least one carboxylic acid selected from the group consisting of formic acid, acetic acid or propionic acid.<sup>(13)</sup>

In light of the foregoing, a second aspect of appellants' invention relates to a certain preservative which comprises the impregnated salts of appellants' Claim 1, which is defined in Claims 6,<sup>(14)</sup> 7,<sup>(15)</sup> 8 to 10,<sup>(16)</sup> 11,<sup>(17)</sup> 17<sup>(18)</sup> and 18 to 19<sup>(19)</sup>, and to the preparation of the preservative which is

(9) Cf. eg. page 4, indicated lines 11 to 22, of the application.

(10) Cf. page 1, indicated line 18, to page 2, indicated line 20, of the application.

(11) Cf. eg. page 2, indicated lines 17 to 26, in conjunction with page 1, indicated lines 18 to 27, of the application. Note also in this context page 3, indicated lines 11 to 19, of the application. Note also in this context page 9, indicated line 20, to page 10, indicated line 28, of the application.

(12) Cf. Claim 4, and page 3, indicated lines 39 to 47, of the application.

(13) Cf. Claim 22, and page 3, indicated lines 30 to 32, of the application.

(14) Cf. eg. also page 2, indicated lines 28 to 32, and page 5, indicated lines 20 to 25, of the application.

(15) Cf. eg. also page 5, indicated lines 23 to 25, and page 5, indicated line 33, to page 6, indicated line 6, of the application.

(16) Cf. eg. also page 5, indicated lines 27 to 31, page 6, indicated lines 17 to 26, and page 7, indicated lines 19 to 44, of the application.

(17) Cf. eg. also page 5, indicated lines 27 to 31, and page 7, indicated line 46, to page 8, indicated line 3, of the application.

(18) Cf. eg. also page 5, indicated lines 23 to 25, of the application.

(19) Cf. eg. also page 6, indicated lines 22 to 26, of the application.

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defined in Claims 14 and 15.<sup>(20)</sup> Apart from the impregnated salts of appellants' Claim 1, the preservative of appellants' invention comprises a carrier, a protective agent, a dusting powder and/or formulation auxiliaries and the like as optional additional constituents. The preservative is obtained by mixing the impregnated salts with one or more of the carriers and/or formulation auxiliaries, and then agglomerating the mixture, optionally with the addition of at least one binder to obtain granules.<sup>(21)</sup>

Last but not least, appellants' invention provides for certain methods of using the impregnated salts or the preservative which are defined in Claims 16 and 17,<sup>(22)</sup> in which the impregnated salts or the preservative are added to human or animal food for preserving or acidifying it, or the impregnated salts or the preservative are introduced into, or placed on, an item to treat that item with acid.<sup>(23)</sup>

GROUND(S) OF REJECTION TO BE REVIEWED:

- I. Whether the Examiner erred finding that the subject matter of appellants' Claims 1, 2, 4 to 19, 21 and 23 to 25 was unpatentable under 35 U.S.C. §103(a) for being rendered *prima facie* obvious by the teaching of *van Ooijen* (EP 0 608 975) when taken in view of the disclosure of *Kotani et al.* (US 4,122,187).
- II. Whether the Examiner erred finding that the subject matter of appellants' Claims 1, 2, 4 to 19, 21 and 23 to 25 was unpatentable under 35 U.S.C. §103(a) for being rendered *prima facie* obvious by the teaching of *Gonthier et al.* (US 3,600,198) when taken in view of the disclosure of *Kotani et al.* (*ibid.*).
- III. Whether the Examiner erred finding that the subject matter of appellants' Claim 22 was unpatentable under 35 U.S.C. §103(a) for being rendered *prima facie* obvious by the teaching of *van Ooijen* (*ibid.*) when taken in view of the disclosure of *Kotani et al.* (*ibid.*) and further in view of the disclosure of *Gonthier et al.* (*ibid.*).

ARGUMENT(S):

The arguments regarding issues I. and II. which are set forth in the following focus primarily on the particularities of the impregnated salts specified in Claim 1. Those arguments are, however,

(20) Cf. eg. also page 2, indicated line 40, to page 3, indicated line 9, page 6, indicated line 28, to page 7, indicated line 17, and page 8, indicated lines 15 to 37, of the application.

(21) Cf. eg. page 6, indicated line 41, to page 7, indicated line 4, of the application. Note also in this context page 10, indicated line 32, to page 13, indicated line 45, of the application.

(22) Cf. eg. also page 8, indicated line 39, to page 9, indicated line 1, and page 9, indicated lines 10 to 14, of the application.

(23) Note also in this context page 14, indicated lines 1 to 8, of the application.

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equally applicable where Claims 2, 4 to 19 and 21 to 25 are concerned because those claims incorporate the subject matter of Claim 1, either directly or indirectly, by reference.<sup>(24)</sup>

It is additionally respectfully noted with regard to the issues I. and II. that the Examiner did not include Claim 22 in the respective final rejections. Appellants' Claims 23 to 25 depend on Claim 22 and, therefore, incorporate all of the limitations set forth in Claim 22. If an independent claim is non-obvious under 35 U.S.C. §103, then any claim depending therefrom is non-obvious.<sup>(25)</sup> The Examiner's inclusion of Claims 23 to 25 in issues I. and II. is, in light of those principles, deemed to be in error for being inconsistent with the Examiner's exclusion of Claim 22 from those issues.

I. For the following reasons, the Examiner's finding that appellants' Claims 1, 2, 4 to 19, 21 and 23 to 25 are unpatentable under 35 U.S.C. §103(a) in light of the teaching of van Ooijen (EP 0 608 975) when taken in view of the disclosure of Kotani et al. (US 4,122,187) is deemed to be in error.

The teaching of *van Ooijen* seeks to mitigate the problems which are encountered when hydroxycarboxylic acids, especially lactic acid, which are hygroscopic and syrupy liquids under ambient conditions are to be stored and used.<sup>(26)</sup> *Van Ooijen* addresses this problem by releasably binding the hydroxycarboxylic acid,<sup>(27)</sup> making use of the principle that a first acid is released from its salt when a salt of the first acid is dissociated in a suitable aqueous or non-aqueous system in the presence of a second acid which has a lower pKa value than the first acid.<sup>(28)</sup> Accordingly, *van Ooijen* converts the hydroxycarboxylic acid, for storage and handling, into an alkali metal salt or an alkaline earth metal salt, and combined the salt of the hydroxycarboxylic acid with an aliphatic carboxylic acid which has a lower pKa value, ie. which is more acidic, than the hydroxycarboxylic acid. The release of the hydroxycarboxylic acid for use is then achieved by bringing the admixture of the hydroxycarboxylic acid salt and the aliphatic carboxylic acid into contact with a suitable aqueous or non-aqueous system which allows that the salt and the acid dissociate.<sup>(29)</sup> Once the admixture of the salt and the aliphatic carboxylic acid have been allowed to dissociate, the hydroxycarboxylic acid is released while the aliphatic carboxylic acid combines with the alkali metal or alkaline earth metal ion.<sup>(30)</sup>

In view of the principles underlying the procedure employed by *van Ooijen* and the result which is sought, *van Ooijen* point out that it is preferable that the aliphatic carboxylic acid compo-

(24) If an independent claim is non-obvious under 35 U.S.C. §103, then any claim depending therefrom is non-obvious (*In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (CAFC 1988)).

(25) Cf. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (CAFC 1988).

(26) Cf. page 2, indicated lines 3 to 15, of EP 0 608 975.

(27) Cf. eg. page 2, indicated lines 1 and 2, of EP 0 608 975.

(28) Cf. eg. page 3, indicated lines 27 to 31, of EP 0 608 975.

(29) Cf. eg. page 2, indicated lines 16 to 19, of EP 0 608 975.

(30) Cf. eg. page 2, indicated lines 26 to 32, of EP 0 608 975.

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nent and the alkali metal or alkaline earth metal ion be selected such that the salt of the aliphatic carboxylic acid which is formed upon use of the admixture have a low solubility in the solvent system. It is, therefore, preferred according to the teaching of *van Ooijen* to employ an alkaline earth metal salt of the hydroxycarboxylic acid in combination with an aliphatic carboxylic acid such as trans-fumaric acid, maleic acid, malonic acid, and methyl-malonic acid.<sup>(31)</sup>

The disclosure of *Kotani et al.* addresses problems which are encountered due to the odor and the particle size of sorbic acid, which has a melting point of above 100°C, and certain double salts of sorbic acid which are obtained when a solution of sorbic acid and the salt of an organic or inorganic acid is reacted to form the double salt, and the double salt is subsequently precipitated.<sup>(32)</sup> *Kotani et al.* disclose that the irritating odor and the scattering of the fine powders of sorbic acid and the double salts thereof is decreased when the sorbic acid or the double salt thereof is combined with from 0.05 to 5 parts by weight of glycerin.<sup>(33)</sup>

The Examiner argued that appellants' invention was prima facie obvious under the provisions of Section 103(a) because

- *van Ooijen* allows for the use of liquid aliphatic acids and the impregnation of the salt of the hydroxycarboxylic acid with such liquid aliphatic carboxylic acids;<sup>(34)</sup>
- *van Ooijen* states that the salt of the hydroxycarboxylic acid may be admixed or impregnated with from 1 to 90% by weight, preferably from 40 to 60% by weight, of the aliphatic carboxylic acid, it being most preferred that the aliphatic carboxylic acid and the hydroxycarboxylate salt be employed in equimolar amounts;<sup>(35)</sup> and
- *Kotani et al.* refer to sorbic acid and certain double salts thereof which have a particle size of from less than 100 µm to more than 300 µm.<sup>(36)</sup>

"In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification."<sup>(37)</sup> The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination or modification, and obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is

(31) Cf. eg. page 2, indicated lines 47 to 54, of *EP 0 608 975*.

(32) Cf. eg. col. 1, indicated lines 17 to 31, and col. 2, indicated lines 65 to 68, of *US 4,122,187*. As concerns the double salts of sorbic acid cf. eg. col. 2, indicated lines 42 to 64, of *US 4,122,187*.

(33) Cf. eg. col. 2, indicated lines 4 to 24, of *US 4,122,187*.

(34) Cf. page 3, indicated lines 12 to 15, of *EP 0 608 975*.

(35) Cf. page 3, indicated lines 18 to 21, of *EP 0 608 975*.

(36) Cf. col. 1, indicated lines 21 to 31, and col. 6, indicated lines 3 to 5, of *US 4,122,187*.

(37) *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).



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some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art.<sup>(38)</sup> "There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art",<sup>(39)</sup> the strongest rationale for combining references being a recognition, expressly or impliedly in the prior art or drawn from a convincing line of reasoning based on established scientific principles or legal precedent, that some advantage or expected beneficial result would have been produced by their combination.<sup>(40)</sup> Appellants respectfully urge that, at the time appellants made their invention, there was no motivation to modify the teaching of *van Ooijen* in light of the disclosure of *Kotani et al.* in the manner which is necessary to arrive at the specifics of the impregnated salts defined in appellants' Claim 1.

Based on the teaching of *van Ooijen* and the disclosure of *Kotani et al.*, a person of ordinary skill in the art could not reasonably expect to produce any advantage or beneficial result by employing an aliphatic carboxylic acid which is liquid at a temperature of 40°C or below. The preferred aliphatic carboxylic acids which are mentioned by *van Ooijen* are, without exception, solids which have melting or sublimation points above 100°C. *Kotani et al.* refer to the use of salts of such acids, rather than the use of the acids per se, in the preparation of the sorbic acid double salts, and aliphatic carboxylic acid which is liquid at a temperature of 40°C or below exhibit a sharp or pungent odor.<sup>(41)</sup> Moreover, the amount of the aliphatic carboxylic acid which is employed in accordance with the teaching of *van Ooijen* determines how completely the salt of the hydroxycarboxylic acid is converted into the desired hydroxycarboxylic acid, ie. how completely the hydroxycarboxylic acid is liberated from the salt upon use. There was therefore no reasonable expectation to arrive at an advantage or a beneficial result by employing any aliphatic carboxylic acid in less than equimolar amounts. The teachings of the prior art upon which the Examiner relied in the final rejection of appellants' claims are therefore not suited to motivate a person of ordinary skill in the art to do what appellants have done.

The nature of the problems which appellants sought to address with their invention is equally unsuited to guide a person of ordinary skill in the art to select the particular requirements of appellants' impregnated salts based on the information which is conveyed by the teaching of *van Ooijen* and by the disclosure of *Kotani et al.* According to the disclosure of *Kotani et al.*, the problem of odor is encountered with sorbic acid and with double salts thereof, and the problem can only be

(38) *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (CAFC 1990), *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (CAFC 1991).

(39) *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (CAFC 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a prima facie case of obvious was held improper.).

(40) *In re Semaker*, 702 F.2d 989, 994-95, 217 USPQ 1, 5-6 (CAFC 1983).

(41) Cf. eg. page 1, indicated lines 18 to 23, of the application.

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obviated by adding to the sorbic acid or the double salt thereof certain amounts of glycerin. The teaching of *van Ooijen* merely mentions in the abstract that the method of combining the salt of a hydroxycarboxylic acid with an acid of a lower pKa masks the unpleasant odor of the hydroxycarboxylic acids. Moreover, the primary focus of *van Ooijen*'s teaching resides in admixtures of hydroxycarboxylic acid salts with solid aliphatic acids.<sup>(42)</sup> A person of ordinary skill in the art would reasonably attribute the masking of the the unpleasant odor of the hydroxycarboxylic acids to the fact that the hydroxycarboxylic acid is converted into its salt for storage and handling. Correspondingly, a person of ordinary skill in the art would not reasonably expect that the method of *van Ooijen* is suitable to make any odor generated by the acid which is combined with the hydroxycarboxylic acid salt. Accordingly, a person of ordinary skill could not find any suggestion in the teaching of *van Ooijen* that the combination of a carboxylic acid salt with a carboxylic acid which is liquid or becomes liquid at a temperature of 40°C or below would be suitable to mask the odor of the liquid or semi-liquid acid. The problem underlying appellants' invention can therefore also not serve to provide a person of ordinary skill in the art with a reasonable motivation to combine the teaching of *van Ooijen* and the disclosure of *Kotani et al.*

Last but not least, the Examiner did not point to any particular knowledge in the pertinent art which would have motivated a person of ordinary skill in the art to modify the teaching of *van Ooijen* in light of the disclosure of *Kotani et al.* in the manner which is necessary to arrive at appellants' impregnated salts, nor is such a knowledge apparent to appellants.<sup>(43)</sup> Instead, the Examiner selectively picked out only those statements from the references which mirror elements of appellants' claims and combined those statements so as to produce the claimed subject matter. The Examiner's respective selection and combination is, in light of the foregoing, clearly not guided by any information conveyed by the references or by the knowledge which was available at the time appellants made their invention.<sup>(44)</sup> Also, rather than presenting a convincing line of reasoning why a person of ordinary skill in the art would have done what appellants did in light of the technical information which was available at the pertinent point in time, or suitable legal precedent, the Examiner merely asserted that a person of ordinary skill in the art could have, and therefore would have, made the selection and combination which yields in the provisions recited in appellants' claims. However, as pointed out above, the mere fact that references can be combined or modified is not sufficient to

(42) The preferred aliphatic carboxylic acids which are mentioned by *van Ooijen* are, without exception, solids which have melting or sublimation points above 100°C.

(43) The level of skill in the art cannot be relied upon to provide the suggestion to combine references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (CAFC 1999). See also *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (CAFC 2002) discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references.

(44) Cf. eg. *Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 230 USPQ 303 312-313 (CAFC 1983): "To imbue one of ordinary skill in the art with the knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein which only the inventor taught is used against the teacher."

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establish that the claimed invention was *prima facie* obvious where the motivation to make the selection and combination is lacking.<sup>(45)</sup>

Furthermore, appellants' Claim 4 requires that the acid of the carboxylic acid salt and the carboxylic acid which is employed for impregnating the salt be identical. For the principles underlying the teaching of *van Ooijen* to apply it is, however, mandatory that the aliphatic acid which is combined with the salt have a pKa value which is below the pKa of the hydroxycarboxylic acid of the hydroxycarboxylic acid salt. A modification of the teaching of *van Ooijen* as is necessary to arrive at the subject matter which is defined in appellants' Claim 4 would, therefore, not only change the principle of operation of the compositions addressed in the teaching of *van Ooijen* but also render the compositions taught by *van Ooijen* unsatisfactory for their intended purpose. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.<sup>(46)</sup> Also, if the proposed modification would render the prior art invention which is being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.<sup>(47)</sup>

In light of the foregoing, it is appellants' position that the Examiner erred finding that the subject matter of Claims 1, 2, 4 to 19, 21 and 23 to 25 is rendered unpatentable under Section 103(a) by the teaching of *van Ooijen* when taken in view of the disclosure of *Kotani et al.*

II. For the following reasons, the Examiner's finding that appellants' Claims 1, 2, 4 to 19, 21 and 23 to 25 are unpatentable under 35 U.S.C. §103(a) in light of the teaching of Gonthier et al. (US 3,600,198) when taken in view of the disclosure of Kotani et al. (ibid.) is deemed to be in error.

The teaching of *Gonthier et al.* relates to a mixture of propionic acid and benzoic acid which is buffered to a pH below 7 and preferably between 4 and 5 with the corresponding alkali metal or magnesium salts of those acids, and which exhibits synergistic biocidal properties.<sup>(48)</sup> The molar ratio of the acid salt to the corresponding acid may vary from 0.1/1 to 100/1, and the quantities of (propionate + propionic acid) to (benzoate + benzoic acid) are preferably between 0.5/1 and 99/1.<sup>(49)</sup>

(45) Cf. *In re Napier*, 55 F.3d, 610, 613, 34 USPQ2d 1782, 1784 (CAFC 1995): "Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination."; *In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (CAFC 1987); *In re Laskowski*, 871 F.2d 115, 117, 10 USPQ2d 1397, 1399 (CAFC 1989): "[t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification", quoting *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (CAFC 1984).

(46) Cf. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

(47) Cf. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (CAFC 1984).

(48) Cf. col. 1, indicated lines 46 to 63, of US 3,600,198.

(49) Cf. col. 1, indicated lines 64 to 72, of US 3,600,198.

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A buffered system as addressed by the teaching of *Gonthier et al.* balances the pH over certain ranges by adjusting the equilibrium state of the dissociated form and the associated form of an acid salt based on the amount of additional acid which is present in the buffer. It is accordingly one precondition for a buffer system that the acid salt be dissociated to a certain extent, and it is another precondition that associated salt be provided in a medium which allows the salt to promptly dissociate when the amount of additional acid which is present in the system is altered. A system which is in the solid state does not allow for a dissociated state of the salt. The solid state of a system, therefore, prevents any equilibrium of the dissociated form and the associated form of the acid salt as well as any adjustment of such equilibrium of the dissociated form and the associated form. Therefore, the buffered mixtures which are addressed in the teaching of *Gonthier et al.* are necessarily, at least to a certain extent, in liquid form.

The biocidal buffered mixtures of *Gonthier et al.* are employed by introducing the additive into water, by sprinkling the additive onto ice, by incorporating it into brine or waste intended after drying for cattle feed fabrication,<sup>(50)</sup> or by adsorbing a diluted solution of the buffered mixture on an inert filler and treating fish flours directly by spraying the adsorbate.<sup>(51)</sup>

The Examiner argued that the subject matter of appellants' claims was rendered prima facie obvious under Section 103(a) by the teaching of *Gonthier et al.* when taken in view of the disclosure of *Kotani et al.* because

- *Gonthier et al.* disclose a preservative-like "impregnated salt" containing like acids and salts in amount from 0.1/ 1 to 100/1, referring to col. 1, indicated lines 64 to 73, and to Claims 1, 2 and 4 to 6, of *US 3,600,198*, and
- *Kotani et al.* refer to sorbic acid and certain double salts thereof which have a particle size of from less than 100  $\mu\text{m}$  to more than 300  $\mu\text{m}$ .<sup>(52)</sup>

However, as pointed out in the remarks regarding the teaching of *Gonthier et al.*, the buffered systems which are addressed in that teaching are necessarily, at least to a certain extent, in liquid form. The disclosure of *Kotani et al.*, on the other hand, deals with problems encountered due to fine particles of sorbic acid and double salts thereof. There was therefore also no motivation for a person of ordinary skill in the art to modify the teaching of *Gonthier et al.* in light of the disclosure of *Kotani et al.* Nor was there any motivation for a person of ordinary skill in the art to turn away from the buffered systems taught by *Gonthier et al.* which are, at least to a certain extent, in liquid form, and to focus instead on solid salts having a certain particle size as would have been necessary to arrive at the specifics of the impregnated salts which are referenced in appellants' claims. To the contrary, a person of ordinary skill in the art considering the disclosure of *Kotani et al.* that particu-

(50) Cf. col. 2, indicated lines 33 to 48, of *US 3,600,198*.

(51) Cf. col. 2, indicated lines 48 to 52, of *US 3,600,198*.

(52) Cf. col. 1, indicated lines 21 to 31, and col. 6, indicated lines 3 to 5, of *US 4,122,187*.

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late products, ie. acids or salts of the acids, are the cause of, rather than the solution to, a problem would have had to consider it a bonus and not a drawback that the buffered mixtures of *Gonthier et al.* are, at least to a certain extent, in liquid form. Accordingly, a person of ordinary skill in the art could not reasonably expect to produce any advantage or beneficial result by making the modification upon which the Examiner's arguments are based.

Such motivation is also not apparent from the problem to be solved by applicants' invention. As stated in the foregoing, *Kotani et al.* point out that the problem of odor is encountered with sorbic acid and with double salts thereof and the teaching of *Gonthier et al.* is silent on the issue of odor problems. A person of ordinary skill could therefore not find any suggestion in the referenced art that the problem to be solved by appellants' invention could be addressed by the impregnated salts which are defined in appellants' Claim 1.

Again, the Examiner merely made a selection and combination of statements from the referenced prior art in an attempt to recreate the requirements of appellants' claims which was guided by the elements of appellants' invention rather than by a teaching or a suggestion in the prior art or in the technical background. Also, in light of appellants' requirement that the impregnated salt be a solid having a certain particle size, a modification of the teaching of *Gonthier et al.* as is necessary to arrive at appellants' impregnated salts would clearly change the principle of operation of the mixture taught by *Gonthier et al.* The motivation to make the requisite change that is required for a finding of obviousness under the provisions of Section 103(a) is therefore lacking.

Appellants' arguments why the Examiner's final rejection based on the teaching of *van Ooijen* taken in view of the disclosure of *Kotani et al.* was in error are therefore equally applicable where the Examiner's final rejection is based on the teaching of *Gonthier et al.* taken in view of the disclosure of *Kotani et al.* is concerned.

III. For the following reasons, the Examiner's finding that appellants' Claim 22 is unpatentable under 35 U.S.C. §103(a) in light of the teaching of van Ooijen (ibid.) when taken in view of the disclosure of Kotani et al. (ibid.) and further in view of the disclosure of Gonthier et al. (ibid.) is deemed to be in error.

Appellants' Claim 22 specifically requires that the carboxylic acid of the salt which is comprised in the impregnated salt defined in Claim 1, as well as the carboxylic acid which is employed for impregnating the salt, be selected from the group consisting of formic acid, acetic acid and propionic acid. Appellants' remarks on the issues I. and II. are therefore fully applicable to the extent that the Examiner's final rejection of Claim 22 relies upon the teaching of *van Ooijen* taken in view of the disclosure of *Kotani et al.* or the teaching of *Gonthier et al.* taken in view of the disclosure of *Kotani et al.*

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Additionally, to extent that the Examiner's final rejection of appellants' Claim 22 requires a modification of the teaching of *van Ooijen* in light of the disclosure of *Gonthier et al.*, it is respectfully noted that a person of ordinary skill in the art would not have been motivated to modify the compositions addressed in the teaching of *van Ooijen* in light of the disclosure of *Gonthier et al.* as is necessary to arrive at the subject matter of appellants' Claim 22.

On the one hand, the pKa value of the propionic acid which is used in accordance with the buffered mixture of *Gonthier et al.* is by far too high to meet the requirements of *van Ooijen* that a carboxylic acid be used which has a pKa which is lower than the pKa of the hydroxycarboxylic acid which is present in form of its salt.<sup>(53)</sup> On the other hand, benzoic acid has a melting point above 100°C and therefore does not qualify as a carboxylic acid which is liquid or becomes liquid at a temperature of 40°C or below as required in accordance with appellants' Claim 22. It is also noted in this context that benzoic acid has a pKa of 4.21. Benzoic acid is therefore not suited as an acid component in the admixture which is addressed in the teaching of *van Ooijen*, because it not meet *van Ooijen*'s requirement that the aliphatic acid have a lower pKa than the hydroxycarboxylic acid in the carboxylic acid salt. Vice versa, the combination of a propionic acid salt with benzoic acid which is present in *Gonthier et al.*'s buffered mixture does not involve an impregnation of a salt with an acid which is liquid or becomes liquid at a temperature of 40°C or below as required in accordance with appellants' claim.

An attempt to include the disclosure of *Gonthier et al.* when considering the teaching of *van Ooijen* in light of the disclosure of *Kotani et al.* therefore fails because a person of ordinary skill in the art would, again, not be motivated to make the combination of the references or the selection and combination of pertinent elements which is necessary to arrive at appellants' invention.

### CONCLUSION

In light of the foregoing reasons and explanations, appellants respectfully urge that the Examiner final rejection

- I. of appellants' Claims 1, 2, 4 to 19, 21 and 23 to 25 under 35 U.S.C. §103(a) as being unpatentable in light of the teaching of *van Ooijen* when taken in view of the disclosure of *Kotani et al.*;
- II. of appellants' Claims 1, 2, 4 to 19, 21 and 23 to 25 under 35 U.S.C. §103(a) as being unpatentable in light of the teaching of *Gonthier et al.* when taken in view of the disclosure of *Kotani et al.*; and
- III. of appellants' Claim 22 under 35 U.S.C. §103(a) as being unpatentable in light of the teaching

(53) The pKa of formic acid is 4.77, the pKa of acetic acid is 4.78 and the pKa of propionic acid is 4.88.

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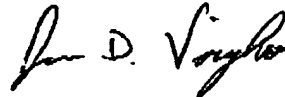
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of *van Ooijen* when taken in view of the disclosure of *Kotani et al.* and further in view of the disclosure of *Gonthier et al.*,  
was in error. It is therefore respectfully requested that the Examiner's respective rejections be reversed. Favorable action is solicited.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 14.1437. Please credit any excess fees to such deposit account.

Respectfully submitted,  
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Encl.: CLAIMS APPENDIX

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## CLAIMS APPENDIX:

THE PENDING CLAIMS:

1. Impregnated salts with a particle size of 10  $\mu\text{m}$  to 2000  $\mu\text{m}$  comprising at least one salt of one or more carboxylic acids, which salt has been impregnated with from 0.5 to 30% by weight, based on the carboxylic acid salt, of at least one carboxylic acid that is liquid or becomes liquid at a temperature of 40°C or below.
2. Impregnated salts as claimed in claim 1, comprising at least one salt of a C<sub>1</sub>-C<sub>8</sub>-mono- or dicarboxylic acid, which salt has been impregnated with at least one C<sub>1</sub>-C<sub>8</sub>-mono- or dicarboxylic acid.
4. Impregnated salts as claimed in claim 1, where the carboxylic acids in the carboxylic acid salts and the carboxylic acid used for impregnating the salts are identical.
5. Impregnated salts as claimed in claim 1, wherein the impregnated salts comprise at least one salt selected from the group of ammonium, potassium, sodium, lithium, magnesium or calcium salts.
6. A preservative comprising an impregnated salt as claimed in claim 1.
7. A preservative as claimed in claim 6, additionally comprising a carrier.
8. A preservative as claimed in claim 6, which is coated with a protective agent which is soluble or swellable in water at 20°C.
9. A preservative as claimed in claim 6, wherein water-soluble polymers, organic acids, their salts or low-melting inorganic salts are used as protective agents.
10. A preservative as claimed in claim 6, further comprising a protective agent selected from the group consisting of polyethylene glycols, polyvinylpyrrolidones, C<sub>3</sub>-C<sub>14</sub> organic acids and their salts, and amino acids and their salts.
11. A preservative as claimed in claim 6, wherein a dusting powder is applied to the surface in addition to or in place of the protective agent.
12. A process for producing impregnated salts as claimed in claim 1, which comprises impregnating at least one salt of a carboxylic acid or of a mixture of carboxylic acids, with at least one liquid carboxylic acid until the concentration is 30% by weight based on the carboxylic acid salt.
13. A process as claimed in claim 12, wherein at least one carboxylic acid is introduced into a mixer, and at least one salt of a carboxylic acid or a mixture of carboxylic acids is metered in.

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14. A process for producing a preservative, which comprises mixing impregnated salts as claimed in claim 1 with one or more carriers and/or formulation auxiliaries, and agglomerating with or without the addition of at least one binder.
15. A process as claimed in claim 14, wherein the preservative is coated with a protective agent which is soluble or swellable in water at 20°C and/or if required the flow characteristics of the preservatives are ensured by dusting with a finely dispersed dusting powder.
16. A process for preserving human and animal food, wherein the impregnated salts as claimed in claim 1, or the preservatives are added to the human or animal food.
17. A preservative as claimed in claim 6, additionally comprising formulation auxiliaries.
18. A preservative as claimed in claim 10, wherein the protective agent is selected from the group consisting of C<sub>3</sub>-C<sub>6</sub> organic acids and their salts.
19. A preservative as claimed in claim 18, wherein the protective agent is selected from the group consisting of citric acid, fumaric acid, succinic acid, adipic acid, benzoic acid and their salts.
21. A process for acid treatment wherein the impregnated salts of claim 1 or the preservatives are introduced into or placed on an item to be treated.
22. Impregnated salts as claimed in claim 1, comprising at least one salt of a carboxylic acid selected from the group consisting of formic acid, acetic acid or propionic acid, which salt has been impregnated with at least one carboxylic acid selected from the group consisting of formic acid, acetic acid or propionic acid.
23. Impregnated salts as claimed in claim 22, comprising an active substance content of from 68 to 75% by weight.
24. Impregnated salts as claimed in claim 22, comprising an active substance content of from 70 to 73% by weight.
25. Impregnated salts as claimed in claim 22, comprising an active substance content of from 70 to 72% by weight.

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